Claims

What is claimed is:

1. A decoder, comprising:

a feedback equalizer capable of receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips; and

a subsymbol processor coupled to said feedback equalizer to generate a subsymbol waveform upon receipt of a second number of chips of the symbol and provide the subsymbol waveform to the feedback equalizer, the second number being less than the first number, said feedback equalizer to equalize the modulated signal using the subsymbol waveform.

2. The decoder of Claim 1, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

3. The decoder of Claim 1, said feedback equalizer comprising:

a hard decision unit coupled to said equalizer for determining hard decision information associated with the modulated signal ; and

a feedback filter coupled to said hard decision unit and said symbol processor to selectively equalize the modulated signal using one of the hard decision information and the subsymbol waveform.

4. The decoder of Claim 1, wherein the symbol processor comprises:

a demodulation unit coupled said feedback equalizer and comprising subsymbol decoding processing logic capable of generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

a remodulation unit coupled to said demodulation unit and said feedback equalizer, said remodulation unit generating a subsymbol waveform corresponding to the decoded subsymbol information.

5. The decoder of Claim 4, wherein said demodulation unit further comprises a symbol correlator coupled to said decoding processing logic to correlate the perceived second number of chips against a subset of valid candidate symbols to obtain a best match

candidate, said decoding processing logic generating the decoded subsymbol information based on the best match candidate.

6. The decoder of Claim 4, wherein said demodulation unit further comprises decision processing logic capable of deciding the symbol upon receipt of the first number of chips defining the symbol.

7. The decoder of Claim 6, wherein said decision processing logic comprises first and second demodulation pathways capable of deciding the symbol by at least one of first and second distinct modulation modes.

8. The decoder of Claim 7, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

9. The decoder of Claim 1, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

10. A feedback equalizer comprising:

a summing unit having an output and first input for receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips;

a subsymbol processor coupled to said output of said summing unit, said symbol processor capable of generating a subsymbol waveform upon receipt of a second number of chips of the symbol, the second number being less than the first number; and

a feedback filter coupled to a second input of said summing unit and said symbol processing unit to selectively filter the subsymbol waveform from said modulated signal.

11. The equalizer of Claim 10, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

12. The equalizer of Claim 10, further comprising:

a hard decision unit coupled to the output of said summing unit for determining hard decision information associated with the modulated signal ; and

a feedback filter coupled to said hard decision unit and said subsymbol processor to selectively equalize the modulated signal using one of the hard decision information and the subsymbol waveform.

13. The equalizer of Claim 10, wherein the symbol processor comprises:

a demodulation unit coupled said summing unit and comprising subsymbol decoding processing logic capable of generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

a remodulation unit coupled to said demodulation unit and said feedback filter, said remodulation unit generating a subsymbol waveform corresponding to the decoded subsymbol information.

14. The equalizer of Claim 13, wherein said demodulation unit further comprises a symbol correlator coupled to said decoding processing logic to correlate the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate, said decoding processing logic generating the decoded subsymbol information based on the best match candidate.

15. The equalizer of Claim 13, wherein said demodulation unit further comprises decision processing logic capable of deciding the symbol upon receipt of the first number of chips defining the symbol.

16. The equalizer of Claim 15, wherein said decision processing logic comprises first and second demodulation pathways capable of deciding the symbol by at least one of first and second distinct modulation modes.

17. The equalizer of Claim 16, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

18. The equalizer of Claim 10, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

19. A transceiver, comprising:

a feedback equalizer capable of receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips; and

a subsymbol processor coupled to said feedback equalizer to generate a subsymbol waveform upon receipt of a second number of chips of the symbol and provide the subsymbol waveform to the feedback equalizer, the second number being less than the first number, said feedback equalizer to equalize the modulated signal using the subsymbol waveform.

20. The transceiver of Claim 19, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

21. The transceiver of Claim 19, said feedback equalizer comprising:

a hard decision unit coupled to said equalizer for determining hard decision information associated with the modulated signal ; and

a feedback filter coupled to said hard decision unit and said symbol processor to selectively equalize the modulated signal using one of the hard decision information and the subsymbol waveform.

22. The transceiver of Claim 19, wherein the symbol processor comprises:

a demodulation unit coupled said feedback equalizer and comprising decoding processing logic capable of generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

a remodulation unit coupled to said demodulation unit and said feedback equalizer, said remodulation unit generating a subsymbol waveform corresponding to the decoded subsymbol information.

23. The transceiver of Claim 22, wherein said demodulation unit further comprises a symbol correlator coupled to said decoding processing logic to correlate the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate, said decoding processing logic generating the decoded subsymbol information based on the best match candidate.

24. The transceiver of Claim 22, wherein said demodulation unit further comprises decision processing logic capable of deciding the symbol upon receipt of the first number of chips defining the symbol.

25. The transceiver of Claim 24, wherein said decision processing logic comprises first and second demodulation pathways capable of deciding the symbol by at least one of first and second distinct modulation modes.

26. The transceiver of Claim 25, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

27. The transceiver of Claim 19, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

28. The transceiver of Claim 19, further comprising RF and IF sections coupled to said feedback equalizer to provide the modulated signal to said feedback equalizer.

29. A base station comprising the transceiver of Claim 28.

30. A network card comprising the transceiver of Claim 28.

31. An information processing system, comprising the transceiver of Claim 19.

32. A decoding method for a modulated signal including a symbol defined by a first number of chips, comprising:

generating a subsymbol waveform upon receipt of a second number of chips of the symbol, the second number being less than the first number; and

equalizing the modulated signal using the subsymbol waveform.

33. The method of Claim 32, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

34. The method of Claim 32, further comprising:

determining hard decision information associated with the modulated signal ; and

wherein said equalizing step comprises selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

35. The method of Claim 32, wherein said generating step comprises:

generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

generating a subsymbol waveform corresponding to the decoded subsymbol information.

36. The method of Claim 35, further comprising:

correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate; and

wherein said decoded subsymbol generating step comprises generating the decoded subsymbol information based on the best match candidate.

37. The method of Claim 35, further comprising deciding the symbol upon receipt of the first number of chips defining the symbol.

38. The method of Claim 37, wherein said deciding step comprises deciding the symbol by at least one of first and second distinct modulation modes.

39. The method of Claim 38, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

40. The method of Claim 32, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

41. A computer program product, comprising computer readable program code causing an information processor to perform the following steps, comprising:

receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips;

generating a subsymbol waveform upon receipt of a second number of chips of the symbol, the second number being less than the first number; and

equalizing the modulated signal using the subsymbol waveform.

42. The product of Claim 41, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

43. The product of Claim 41, further comprising:

computer readable program code causing the information processor to perform the step of determining hard decision information associated with the modulated signal ; and

wherein said equalizing step comprises selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

44. The product of Claim 41, wherein said generating step comprises:

generating decoded subsymbol symbol information upon perceiving the second number of chips of the symbol; and

generating a subsymbol waveform corresponding to the decoded subsymbol information.

45. The product of Claim 44, further comprising:

computer readable program code causing the information processor to perform the step of correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate; and

wherein said decoded subsymbol symbol generating step comprises generating the decoded subsymbol information based on the best match candidate.

46. The product of Claim 44, further comprising computer readable program code causing the information processor to perform the step of deciding the symbol upon receipt of the first number of chips defining the symbol.

47. The product of Claim 46, wherein said deciding step comprises deciding the symbol by at least one of first and second distinct modulation modes.

48. The product of Claim 47, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

49. The product of Claim 41, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

50. An information processing system including an information processor coupled to memory, the memory comprising computer readable program code causing the information processor to perform the following operations, comprising:

receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips;

generating a subsymbol waveform upon receipt of a second number of chips of the symbol, the second number being less than the first number; and

equalizing the modulated signal using the subsymbol waveform.

51. The system of Claim 50, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

52. The system of Claim 50, wherein the memory further comprises

computer readable program code causing the information processor to perform the step of determining hard decision information associated with the modulated signal ; and

wherein said equalizing step comprises selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

53. The system of Claim 50, wherein said generating step comprises:

generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

generating a subsymbol waveform corresponding to the decoded subsymbol information.

54. The system of Claim 53, wherein the memory further comprises

computer readable program code causing the information processor to perform the step of correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate; and

wherein said decoded subsymbol generating step comprises generating the decoded subsymbol information based on the best match candidate.

55. The system of Claim 53, wherein the memory further comprises computer readable program code causing the information processor to perform the step of deciding the symbol upon receipt of the first number of chips defining the symbol.

56. The system of Claim 55, wherein said deciding step comprises deciding the symbol by at least one of first and second distinct modulation modes.

57. The system of Claim 56, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

58. The system of Claim 41, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

59. A decoder, comprising:

a feedback equalizer capable of receiving a modulated signal, the modulated signal including a Barker encoded symbol defined by a first number of chips; and

a symbol processor coupled to said feedback equalizer to generate a decided waveform upon receipt of the first number of chips of the symbol and provide the decided waveform to the feedback equalizer, said feedback equalizer to equalize the modulated signal using the decided waveform.

60. The decoder of Claim 59, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

61. The decoder of Claim 60, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

62. A transceiver, comprising the decoder of Claim 61.

63. A base station, comprising the transceiver of Claim 62.

64. A network card comprising the transceiver of Claim 62.

65. An information processing system comprising the transceiver of Claim 62.

66. A feedback equalizer comprising:

a summing unit having an output and first input for receiving a modulated signal, the modulated signal including a Barker encoded symbol defined by a first number of chips;

a symbol processor coupled to said output of said summing unit, said symbol processor capable of generating a decided waveform upon receipt of the first number of chips of the symbol; and

a feedback filter coupled to a second input of said summing unit and said symbol processing unit to selectively filter the decided waveform from said modulated signal.

67. The equalizer of Claim 66, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

68. The equalizer of Claim 67, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

69. A decoding method for a modulated signal including a Barker encoded symbol defined by a first number of chips, comprising:

generating a decided waveform upon receipt of the first number of chips of the symbol; and

equalizing the modulated signal using the decided waveform.

70. The method of Claim 69, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

71. The method of Claim 70, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

72. A computer program product, comprising computer readable program code causing an information processor to perform the following steps, comprising:

receiving a modulated signal including a Barker encoded symbol defined by a first number of chips;

generating a decided waveform upon receipt of the first number of chips of the symbol; and

equalizing the modulated signal using the decided waveform.

73. The product of Claim 72, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

74. The product of Claim 73, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

75. An information processing system including an information processor coupled to memory, the memory comprising computer readable program code causing the information processor to perform the following operations, comprising:

receiving a modulated signal including a Barker encoded symbol defined by a first number of chips;

generating a decided waveform upon receipt of the first number of chips of the symbol; and

equalizing the modulated signal using the decided waveform.

76. The system of Claim 75, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

77. The system of Claim 76, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

78. A decoding unit, comprising:

a decision feedback equalizer having an input capable of receiving modulated signal including a received symbol defined by a first number of chips and an output;

a demodulation unit coupled to the output of said decision feedback equalizer, comprising:

a decoder capable of deciding the received symbol upon receipt of the first number of chips defining the received symbol; and

partial correlation logic capable of generating a decoded subsymbol upon receipt of a second number of chips of the received symbol, the second number being less than the first number; and

a remodulation unit coupled to said partial correlation logic of said demodulation unit and said decision feedback equalizer, said remodulation unit capable of generating a subsymbol waveform corresponding to the decoded subsymbol , said decision feedback equalizer to equalize the modulated signal using the subsymbol waveform.

79. The decoding unit of Claim 78, wherein the subsymbol waveform includes a third number of chips corresponding to the subsymbol waveform, the third number being less than or equal to the second number; and wherein said partial correlation logic generates the decoded subsymbol using correlation processing based on the second number of chips.

80. The decoding unit of Claim 78, said decision feedback equalizer comprising:

a hard decision unit coupled to said equalizer input for determining hard decision information associated with the modulated signal ; and

a feedback filter coupled to said hard decision unit and said remodulation unit for equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

81. The decoding unit of Claim 78, wherein said decoder of said demodulation unit comprise first and second demodulator units capable of deciding the received symbol by at least one of first and second distinct modulation modes.

82. The decoding unit of Claim 81, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying compliant with IEEE Standard 802.11b (1999).

83. A decoder, comprising:

means for receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips; and

means for generating a subsymbol waveform upon receipt of a second number of chips of the symbol and provide the subsymbol waveform to the receiving means, the second number being less than the first number, said receiving means including means for equalizing the modulated signal using the subsymbol waveform.

84. The decoder of Claim 83, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

85. The decoder of Claim 83, said equalizing means comprising:

hard decision means for determining hard decision information associated with the modulated signal ; and

filtering means for selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

86. The decoder of Claim 83, wherein said generating means comprises:

demodulation means for generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

remodulation means for remodulating a subsymbol waveform corresponding to the decoded subsymbol information.

87. The decoder of Claim 86, wherein said demodulation means further comprises symbol correlator means for correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate, said demodulation means generating the decoded subsymbol information based on the best match candidate.

88. The decoder of Claim 86, wherein said demodulation means further comprises decision processing means for deciding the symbol upon receipt of the first number of chips defining the symbol.

89. The decoder of Claim 88, wherein said decision processing means comprises first and second demodulation pathway means capable of deciding the symbol by at least one of first and second distinct modulation modes.

90. The decoder of Claim 89, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

91. The decoder of Claim 83, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

92. A feedback equalizer comprising:

means for receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips;

means for generating a subsymbol waveform upon receipt of a second number of chips of the symbol, the second number being less than the first number; and

means for selectively filtering the subsymbol waveform from said modulated signal.

93. The equalizer of Claim 92, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number

94. The equalizer of Claim 92, further comprising:

means for determining hard decision information associated with the modulated signal ; and

means for selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

95. The equalizer of Claim 92, wherein said generating means comprises:

demodulation means for generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

remodulation means for generating a subsymbol waveform corresponding to the decoded subsymbol information.

96. The equalizer of Claim 95, wherein said demodulation means further comprises means for correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate, said demodulation means generating the decoded subsymbol information based on the best match candidate.

97. The equalizer of Claim 95, wherein said demodulation means further comprises decision processing means for deciding the symbol upon receipt of the first number of chips defining the symbol.

98. The equalizer of Claim 97, wherein said decision processing means comprises first and second demodulation pathway means for deciding the symbol by at least one of first and second distinct modulation modes.

99. The equalizer of Claim 98, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

100. The equalizer of Claim 91, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).

101. A transceiver, comprising:

means for receiving a modulated signal, the modulated signal including a symbol defined by a first number of chips; and

means for generating a subsymbol waveform upon receipt of a second number of chips of the symbol and provide the subsymbol waveform to the receiving means, the second number being less than the first number, said receiving means including means for equalizing the modulated signal using the subsymbol waveform.

102. The transceiver of Claim 101, wherein the subsymbol waveform includes a third number of chips, the third number being less than or equal to the second number.

103. The transceiver of Claim 101, said equalizing means comprising:

hard decision means for determining hard decision information associated with the modulated signal ; and

filtering means for selectively equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

104. The transceiver of Claim 101, wherein said generating means comprises:

demodulation means for generating decoded subsymbol information upon perceiving the second number of chips of the symbol; and

remodulation means for re-modulating a subsymbol waveform corresponding to the decoded subsymbol information.

105. The transceiver of Claim 104, wherein said demodulation means further comprises symbol correlator means for correlating the perceived second number of chips against a subset of valid candidate symbols to obtain a best match candidate, said demodulation means generating the decoded subsymbol information based on the best match candidate.

106. The transceiver of Claim 104, wherein said demodulation means further comprises decision processing means for deciding the symbol upon receipt of the first number of chips defining the symbol.

107. The transceiver of Claim 106, wherein said decision processing means comprises first and second demodulation pathway means capable of deciding the symbol by at least one of first and second distinct modulation modes.

108. The transceiver of Claim 107, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999) respectively.

109. The transceiver of Claim 101, wherein the symbol is modulated in accordance with one of Barker spreading and complementary code keying (CCK) compliant with IEEE Standard 802.11b (1999).19.

110. The transceiver of Claim 101, further comprising RF and IF means for providing the modulated signal to said receiving means.

111. A base station comprising the transceiver of Claim 110.

112. A network card comprising the transceiver of Claim 110.

113. An information processing system, comprising the transceiver of Claim 101.

114. A decoder, comprising:

means for receiving a modulated signal, the modulated signal including a Barker encoded symbol defined by a first number of chips; and

means for generating a decided waveform upon receipt of the first number of chips of the symbol and provide the decided waveform to the receiving means, said receiving means including means for equalizing the modulated signal using the decided waveform.

115. The decoder of Claim 114, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

116. The decoder of Claim 115, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

117. A transceiver, comprising the decoder of Claim 116.

118. A base station, comprising the transceiver of Claim 117.

119. A network card comprising the transceiver of Claim 117.

120. An information processing system comprising the transceiver of Claim 117.

121. A feedback equalizer comprising:

means for receiving a modulated signal, the modulated signal including a Barker encoded symbol defined by a first number of chips;

means for generating a decided waveform upon receipt of the first number of chips of the symbol; and

means for selectively filtering the decided waveform from said modulated signal.

122. The equalizer of Claim 121, wherein the modulated signal further includes a non-Barker encoded symbol defined by a second number of chips.

123. The equalizer of Claim 122, wherein

the non-Barker encode symbol comprises a CCK encoded symbol; and

wherein the Barker encoded and CCK encoded symbols are modulated in compliance with IEEE Standard 802.11b (1999).

124. A decoding unit, comprising:

decision feedback equalization means having an input capable of receiving modulated signal including a received symbol defined by a first number of chips and an output;

demodulation means comprising:

decoding means for deciding the received symbol upon receipt of the first number of chips defining the received symbol; and

partial correlation logic means for generating a decoded subsymbol upon receipt of a second number of chips of the received symbol, the second number being less than the first number; and

remodulation means for generating a subsymbol waveform corresponding to the decoded subsymbol , said decision feedback equalization means including means for equalizing the modulated signal using the subsymbol waveform.

125. The decoding unit of Claim 124, wherein the subsymbol waveform includes a third number of chips corresponding to the subsymbol waveform, the third number being less than or equal to the second number; and wherein said partial correlation logic means generates the decoded subsymbol using correlation processing based on the second number of chips.

126. The decoding unit of Claim 124, said decision feedback equalization means comprising:

hard decision means for determining hard decision information associated with the modulated signal ; and

feedback filter means for equalizing the modulated signal using one of the hard decision information and the subsymbol waveform.

127. The decoding unit of Claim 124, wherein said decoding means comprises first and second demodulator means for deciding the received symbol by at least one of first and second distinct modulation modes.

128. The decoding unit of Claim 127, wherein said first and second distinct modulation modes comprise Barker spreading and complementary code keying compliant with IEEE Standard 802.11b (1999).